Stimulation of bone mineralization by oligofructose at different levels of dietary calcium.

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The stimulating effect of oligofructose (OF) on mineral metabolism was investigated in several experiments in young growing rats. Most of the studies were short-termed and concentrated on the effect on mineral absorption.

We investigated the effect of OF on skeletal mineralization at different levels of dietary Ca in ovariectomized (OVX) adult rats. Ninety-five 5 months old Fisher-344 rats were allocated to 7 groups. Rats were fed semipurified diets containing 5 g/kg Ca without OF (1) and (2), or 5 g/kg Ca plus 2.5 % (3), 5 % (4) and 10 % (5) OF, or 10 g/kg Ca either without (6) or with (7) 5 % OF. Group (1) was sham operated, groups 2-7 had undergone ovariectomy. Fifty % of animals were sacrificed after 8 and 16 weeks each. Ca was analyzed by AAS.

Ca content of lumbar vertebrae was significantly increased by OF when dietary Ca was high. Values were (mg, mean±SEM) 40.5±0.79 in group 6 and 44.0±0.79 in group 7 (p<0.01). In femur effects were more pronounced. OVX-induced loss of bone structure of tibia was significantly prevented when diets were supplemented with OF at both low or high dietary Ca.

We conclude that the stimulating effect of OF on bone mineralization is more effective at high calcium intake, i.e. when depression of mineral solubility may occur.